



Ontario

PROVINCIAL NUCLEAR EMERGENCY RESPONSE PLAN

IMPLEMENTING PLAN

FOR

FERMI 2 NUCLEAR

GENERATING STATION

May 2011

*Prepared by Emergency Management Ontario
Ministry of Community Safety and Correctional Services*



Ontario
Executive Council
Conseil exécutif

**Order in Council
Décret**

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and concurrence of the Executive Council, orders that:

Sur la recommandation de la personne soussignée, le lieutenant-gouverneur, sur l'avis et avec le consentement du Conseil exécutif, décrète ce qui suit :

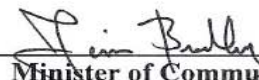
WHEREAS section 8 of the *Emergency Management and Civil Protection Act* R.S.O. 1990 c. E.9, as amended, requires the Lieutenant Governor in Council to formulate an emergency plan respecting emergencies arising in connection with nuclear facilities;

AND WHEREAS the Provincial Nuclear Emergency response Plan – Master Plan (the “Master Plan”) was approved by the Lieutenant Governor in Council by Order in Council 260/2009;

AND WHEREAS the Master Plan provides for the approval of a series of Implementing Plans to directly address emergencies in respect of specific nuclear facilities or radiological issues;

NOW THEREFORE the document entitled “Provincial Nuclear Emergency Response Plan – Implementing Plan for Fermi 2 Nuclear Generating Station” and dated May 2011, be approved as an emergency plan under section 8 of the *Emergency Management and Civil Protection Act*.

Recommended


Minister of Community
Safety and Correctional
Services

Concurred


Chair of Cabinet

Approved and Ordered

JUN 22 2011

Date


Lieutenant Governor

FOREWORD

The Province of Ontario's Nuclear Emergency Response Plan has been developed pursuant to Section 8 of the ***Emergency Management and Civil Protection Act, R.S.O. 1990, c. E. 9*** (hereafter referred to as the ***Emergency Management and Civil Protection Act or EMCPA***). The current edition of this plan supersedes and replaces all older versions which should be destroyed.

Holders of the Provincial Nuclear Emergency Response Plan Implementing Plan for Fermi 2 Nuclear Generating Station are responsible for keeping it updated by incorporating amendments, which may be issued from time to time.

This public document is administered by the **Minister of Community Safety and Correctional Services of Ontario**. All comments and suggestions relating to it should be directed to:

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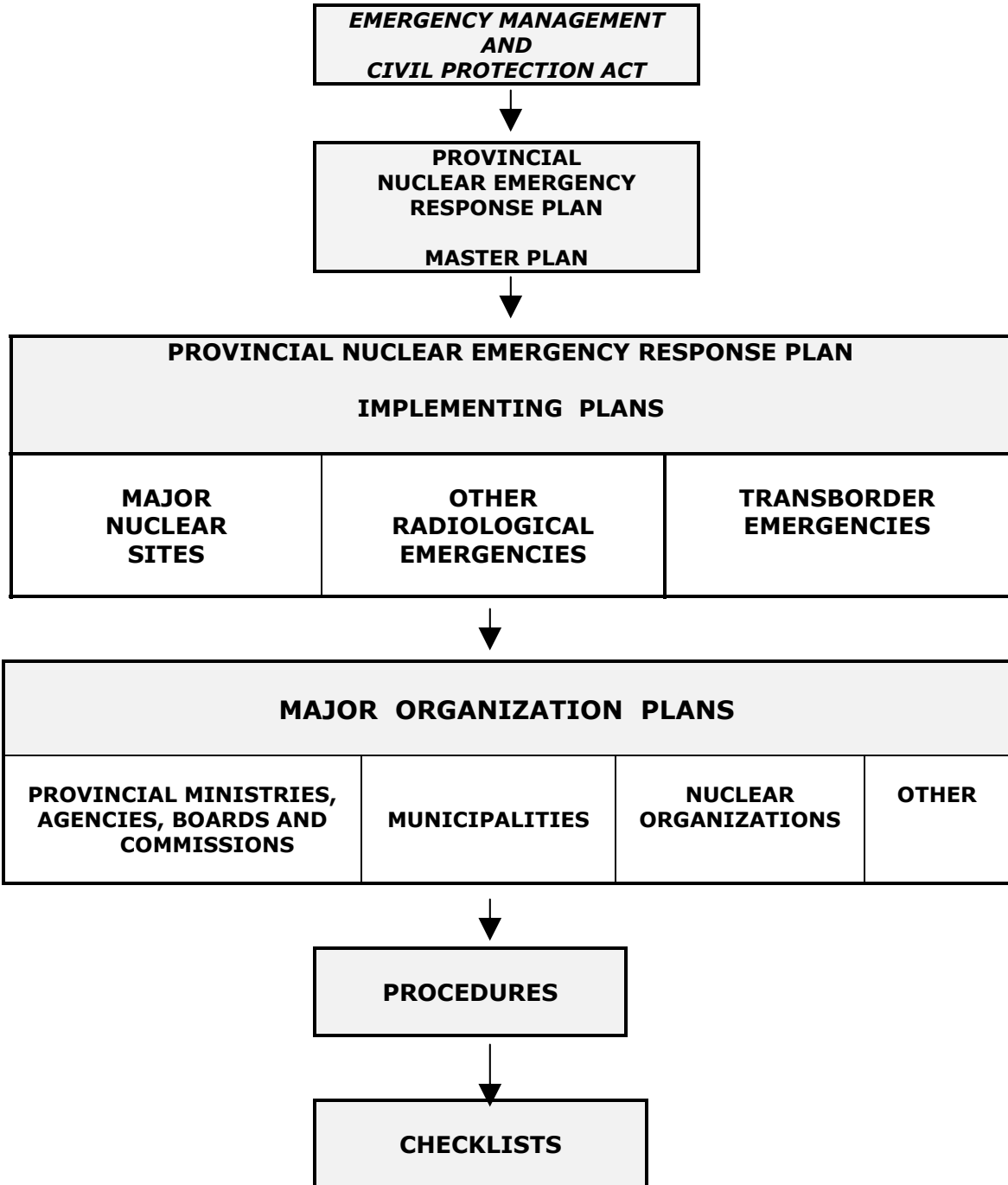


FIGURE I : PROVINCE OF ONTARIO NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE PLANNING STRUCTURE

PROVINCE OF ONTARIO NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE PLANNING STRUCTURE

The structure for nuclear and radiological emergency response planning in Ontario, which is illustrated in **Figure I (page ii)**, consists of the following components:

- The ***Emergency Management and Civil Protection Act*** (EMCPA) requires and authorizes the formulation of the plan.
- **The Provincial Nuclear Emergency Response Plan (PNERP):**
Developed pursuant to Section 8 of the EMCPA and subject to Cabinet approval:
 - **The Master Plan:** sets out the overall principles, policies, basic concepts, organizational structures and responsibilities.
 - **The Implementing Plans:** the elements of the Master Plan are applied to each major nuclear site, transborder emergencies and other types of radiological emergencies, and detailed provincial implementing plans developed.
- **Major Organization Plans :** Each major organization involved (provincial ministries, agencies, boards and commissions, municipalities, and nuclear organizations, etc.) develops its own plan to carry out the relevant roles, responsibilities and tasks agreed to by them and consistent with their mandate. These plans are based on, and should be consistent with the PNERP and with the Provincial Implementing Plans.
- **Procedures :** Based on all of the above plans, procedures are developed for the various emergency centres to be set up and for the various operational functions required.
- **Checklists :** The culmination of the planning process is the development of checklists based on the requirements of the procedures, e.g., individual position or function-specific checklists.

It is necessary that everyone involved in the preparation and implementation of the Provincial Nuclear Emergency Response Plan employ common terminology. The terminology contained in the **Glossary, Annex C**, should be used for this purpose by all concerned. Further reference information can be found in the Incident Management System (IMS) doctrine at www.ontario.ca/ims.

FERMI 2 NUCLEAR EMERGENCY RESPONSE PLAN

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ACRONYMS AND ABBREVIATIONS

ADM	- Assistant Deputy Minister
AECL	- Atomic Energy of Canada Limited
AIM	- Abnormal Incident Manual
ALARA	- 'As low as reasonably achievable'
AMG	- Assurance Monitoring Group
AGPWMGP	- Assurance/General Province-Wide Monitoring Group Plan
BWR	- Boiling Water (nuclear) Reactor
CANDU	- The name of the Canadian developed nuclear power reactor system (from <u>C</u> anada <u>D</u> euterium <u>U</u> ranium)
CCEM	- Cabinet Committee on Emergency Management
CEMC	- Community Emergency Management Coordinator
CEM	- Commissioner of Emergency Management
CESC	- Corporate Emergency Support Centre
CEOC	- Community Emergency Operations Centre
CEOF	- Corporate Emergency Operations Facility
CNSC	- Canadian Nuclear Safety Commission
CRC	- Corporate Response Centre
CRL	- Chalk River Laboratories
CZ	- Contiguous Zone
DNGS	- Darlington Nuclear Generating Station
EB	- Emergency Bulletin
ECI	- Emergency Coolant Injection
EFADS	- Emergency Filtered Air Discharge System
EMCPA	- Emergency Management and Civil Protection Act
EIC	- Emergency Information Centre
EI	- Emergency Information
EIS	- Emergency Information Section
EMO	- Emergency Management Ontario
ENERGY	- Ministry of Energy
EOC	- Emergency Operations Centre
EPZ	- Emergency Planning Zone
ERAP	- Emergency Response Assistance Plan

ER	- Emergency Response
ERMG	- Environmental Radiation Monitoring Group
FADS	- Filtered Air Discharge System
FDA	- Food and Drug Administration
FNEP	- Federal Nuclear Emergency Plan
GOC	- Government Operations Centre
Gy	- Gray. See definition of Absorbed Dose in Glossary, Annex C
HAZMAT	- Hazardous Material
HC	- Health Canada
IAEA	- International Atomic Energy Agency
INES	- International Nuclear Event Scale
JTCC	- Joint Traffic Control Centre
JTCP	- Joint Traffic Control Plan
KI	- Potassium Iodide
km	- Kilometre
LGIC	- Lieutenant Governor In Council
LHDR	- Laurentian Hills/Deep River
LHDRRNEPC	- Laurentian Hills/Deep River Regional Nuclear Emergency Preparedness Committee
LOCA	- Loss-of-Coolant Accident
LOECI	- Loss of Emergency Coolant Injection
MCSCS	- Ministry of Community Safety and Correctional Services
MCSS	- Ministry of Community and Social Services
MDU	- Monitoring & Decontamination Unit
MEMC	- Ministry Emergency Management Coordinator
MEOC	- Ministry Emergency Operations Centre
Met	- Meteorology, meteorological
MMAH	- Ministry of Municipal Affairs and Housing
MNDMF	- Ministry of Northern Development Mines and Forestry
MNR	- Ministry of Natural Resources
MOE	- Ministry of the Environment
MOHLTC	- Ministry of Health and Long-Term Care
MOL	- Ministry of Labour

mSv	-	Millisievert
MTO	-	Ministry of Transportation, Ontario
NIG	-	Nuclear Incident Group
NEMCC	-	Nuclear Emergency Management Coordinating Committee
OMAFRA	-	Ontario Ministry of Agriculture, Food and Rural Affairs
OPG	-	Ontario Power Generation
OPP	-	Ontario Provincial Police
PAL	-	Protective Action Level
PNERP	-	Provincial Nuclear Emergency Response Plan
PNGS	-	Pickering Nuclear Generating Station
PWR	-	Pressurized Water (nuclear) Reactor
PHWR	-	Pressurized Heavy Water (nuclear) Reactor
PEOC	-	Provincial Emergency Operations Centre
PZ	-	Primary Zone
rad	-	See definition of Absorbed Dose in Glossary, Annex C
RAG	-	Regional Action Group
RD	-	Radiological Device
RDD	-	Radiological Dispersal Device
rem	-	See definition of Equivalent Dose in Glossary, Annex C
RHRP	-	Radiation Health Response Plan
RNEMCC	-	Regional Nuclear Emergency Management Coordinating Committee
SRP	-	Site Reference Plan
SMC	-	Site Management Centre
Sv	-	Sievert. See definition of Equivalent Dose in Glossary, Annex C
SZ	-	Secondary Zone
TRF	-	Tritium Removal Facility
TLD	-	Thermoluminescent Dosimeter
UTM	-	Universal Transverse Mercator
WHO	-	World Health Organization

CHAPTER 1

GENERAL AND LEGAL

1.1 Aim of Plan

The aim of the Provincial Nuclear Emergency Response Plan (PNERP) Implementing Plan for the Fermi 2 Nuclear Generating Station is to describe the measures that shall be undertaken to deal with a nuclear emergency caused by an accident/event at the Fermi 2 Nuclear Generating Station in Monroe County, Michigan, U.S.A.

1.2 Scope of Plan

- 1.2.1 This implementing plan should be read and applied in the context of the PNERP, Master Plan.
- 1.2.2 In case of any apparent differences between the provisions of the PNERP Master Plan and this Implementing Plan, the latter being more detailed and specific is applicable.
- 1.2.3 Together, these two plans focus on provincial level actions and should therefore be supplemented by the appropriate municipal and other plans and procedures (**sections 1.3 to 1.5** below).

1.3 Municipal Plan

- 1.3.1 The Town of Amherstburg is the designated (Primary Zone) municipality with respect to the Fermi 2 Nuclear Generating Station (**PNERP Master Plan, Annex A**).
- 1.3.2 The Town of Essex and the City of Windsor are the designated (Host) municipalities under this plan (**PNERP Master Plan, Annex A**).
- 1.3.3 Municipal Plans for dealing with a Fermi 2 nuclear emergency shall be developed by the designated municipalities, as per the **PNERP Master Plan, Section 1.8**.
- 1.3.4 Municipal Plans shall cover the offsite emergency response arrangements and activities of the designated municipalities, municipal departments, boards, and police services and shall assign them roles and responsibilities, consistent with this Plan.
- 1.3.5 The plans prepared by the designated municipalities and by the other organizations (**1.3.4** above) are collectively referred to as 'municipal plans' in this document.
- 1.3.6 In this document the terms 'municipal' and 'municipality' shall include, unless the context indicates otherwise, the designated municipality, as

well as the local police service and local boards whose area of operation includes the area covered by the municipal plan.

1.4 Joint Traffic Control Plan

- 1.4.1 A Joint Traffic Control Plan shall be developed by the Joint Traffic Control Committee for the area likely to be affected by a Fermi 2 nuclear emergency.
- 1.4.2 Representatives of MTO, provincial and local police services, municipal road authorities and emergency services who have jurisdiction over the areas and road networks affected, should be members of, or cooperate with, the Joint Traffic Control Committee.
- 1.4.3 During a nuclear emergency, the Joint Traffic Control Plan for a Fermi 2 emergency should be implemented by the representatives at the Joint Traffic Control Centre (JTCC) (**paragraph 2.7.3**) under the guidance and direction of the Municipal Emergency Operations Centre (EOC) and the Provincial Emergency Operations Centre (PEOC).
- 1.4.4 The JTCC has authority for the management of evacuating traffic in the Primary Zone as well as the traffic impact beyond it, as detailed in the Joint Traffic Control Plan.
- 1.4.5 The Joint Traffic Control Plan shall be designed to meet the requirements of the provincial and municipal nuclear emergency plans. For specific guidance see the following:
 - (a) **Paragraph 2.7.3** Joint Traffic Control Centre
 - (b) **Paragraph 2.10** Telecommunications
 - (c) **Section 3.3** Internal Notifications
 - (d) **Paragraph 3.7** Activation of Emergency Plans – Immediate Actions
 - (e) **Section 4.5** Entry Control
 - (f) **Section 4.6** Evacuation
 - (g) **Section 4.8** Traffic Control
- 1.4.6 The Joint Traffic Control Plan defines the traffic management measures to be undertaken and shall include:
 - (a) The organizational representatives at the JTCC, their roles, responsibilities, communications and reporting arrangements with their respective municipalities.
 - (b) The lead agency for implementation of the Joint Traffic Control Plan during a nuclear emergency response.
 - (c) The location of the JTCC and how it is equipped to monitor traffic flows and communicate with other emergency operations centres.

1.5 Other Plans and Procedures

Other jurisdictions and organizations that have or are assigned responsibility for responding to a Fermi 2 emergency should develop appropriate plans/procedures for carrying out their roles and tasks. They include:

- (a) Provincial ministries.
- (b) Municipal departments, local police services, local boards and other agencies assigned roles and responsibilities in the municipal plans.
- (c) Host municipalities (**paragraph 2.7.6**).

CHAPTER 2

PLAN DATA AND ORGANIZATION

2.1 Fermi 2 Nuclear Generating Station

- 2.1.1 Fermi 2 is located at latitude 41° 58' North and longitude 83° 15' West immediately to the north of Point Aux Peaux on the western shore of Lake Erie in Monroe County, Michigan, U.S.A.. It is approximately 50 km southwest of Detroit.
- 2.1.2 The Fermi 2 nuclear facility houses a General Electric Boiling Water Reactor (Unit 2) of 1093 MWe power with a pressure suppression Mark 1 containment. Unit 1 at the facility was an experimental fast-breeder reactor which has been decommissioned for many years.
- 2.1.3 **Figure 2.1 shows** a schematic diagram of a Boiling Water reactor.

2.2 The Potential Hazard

- 2.2.1 The containment system in the Fermi 2 reactor is of a high-pressure, low-leakage design intended to prevent any release of radioactivity following an accident. If an accident were to occur at the Fermi 2 station, the most probable result would be that its effects would not extend beyond the station boundary.
- 2.2.2 Much less probable is an accident which would result in a low to moderate level of fuel damage combined with some form of containment failure within 6 to 24 hours (or more) of the occurrence of the accident. Such an accident would cause the "basic offsite effect" discussed in the **PNERP Master Plan, paragraph 2.3.3**. The principal characteristics of the basic offsite effect would be:
 - (a) A warning period would usually exist before the offsite effects occur.
 - (b) The main hazard would be from external exposure to radiation.
 - (c) Doses would be low. (For planning purposes it can be assumed that the individual dose to the most exposed person at the station boundary will not exceed 250 mSv (25 rem)).
 - (d) The emissions will not result in any immediate or early health effects.
 - (e) Environmental contamination would be limited to low levels.
 - (f) Low-level radioactive emissions could continue for many days.

- 2.2.3 (a) An even less probable type of accident is one which could cause more severe offsite effects. Such an accident would likely result in a Full Activation response by the PEOC.
- (b) A more severe accident would be defined by one or more of the following:
- i. The time between the accident and any release of radioactivity may be greatly limited.
 - ii. Radiation doses could be high – greater than 250 mSv (25 rem).
 - iii. Radioiodines and particulates could form a significant component of the radioactive emission.
 - iv. Environmental contamination could be quantitatively significant in both extent and duration.
 - v. The area affected could be larger than that for the basic offsite effect.

2.3 Protective Measures

The protective measures available for minimizing the radiation hazard in a nuclear emergency are listed in **Table 2.2** and are defined in the glossary (**Annex C**). The operational use of these measures is described in appropriate sections of this plan.

2.4 Planning Zones

2.4.1 Contiguous Zone

Because of the distance between Fermi 2 and the shoreline of Essex County (about 15 km), no Contiguous Zone is designated.

2.4.2 Primary Zone

The Primary Zone for Fermi 2 is shown in **Figure 2.3**. It includes, in Essex County, an area of the Town of Amherstburg bounded generally by the Detroit River and Lake Erie, the easterly limits of Holiday Beach Conservation Area, 7th Concession South, South Side Road, 4th Concession South, Alma Street, part of Thomas Road and the limits of Honeywell Chemicals. The exact boundaries of the zone can be determined from **Annex A**.

The Primary Zone is the area within which detailed planning and preparedness is carried out for measures against exposure to a radioactive emission. The approximate radius is up to 23 km..

EXPOSURE CONTROL MEASURES	INGESTION CONTROL MEASURES
<ul style="list-style-type: none"> • Entry Control • Sheltering • Evacuation • Thyroid Blocking • Use of Protective Equipment • Decontamination 	<ul style="list-style-type: none"> • Milk Control • Water Control • Pasture Control • Produce and Crop Control • Livestock Control • Food Control • Land Control* • Environmental Decontamination*

Table 2.2 : PROTECTIVE MEASURES

Note: These measures are described and discussed in the **PNERP Master Plan, Chapter 6** and are defined in the glossary at **Annex C** of this plan.

* Normally applicable only to the Recovery Phase

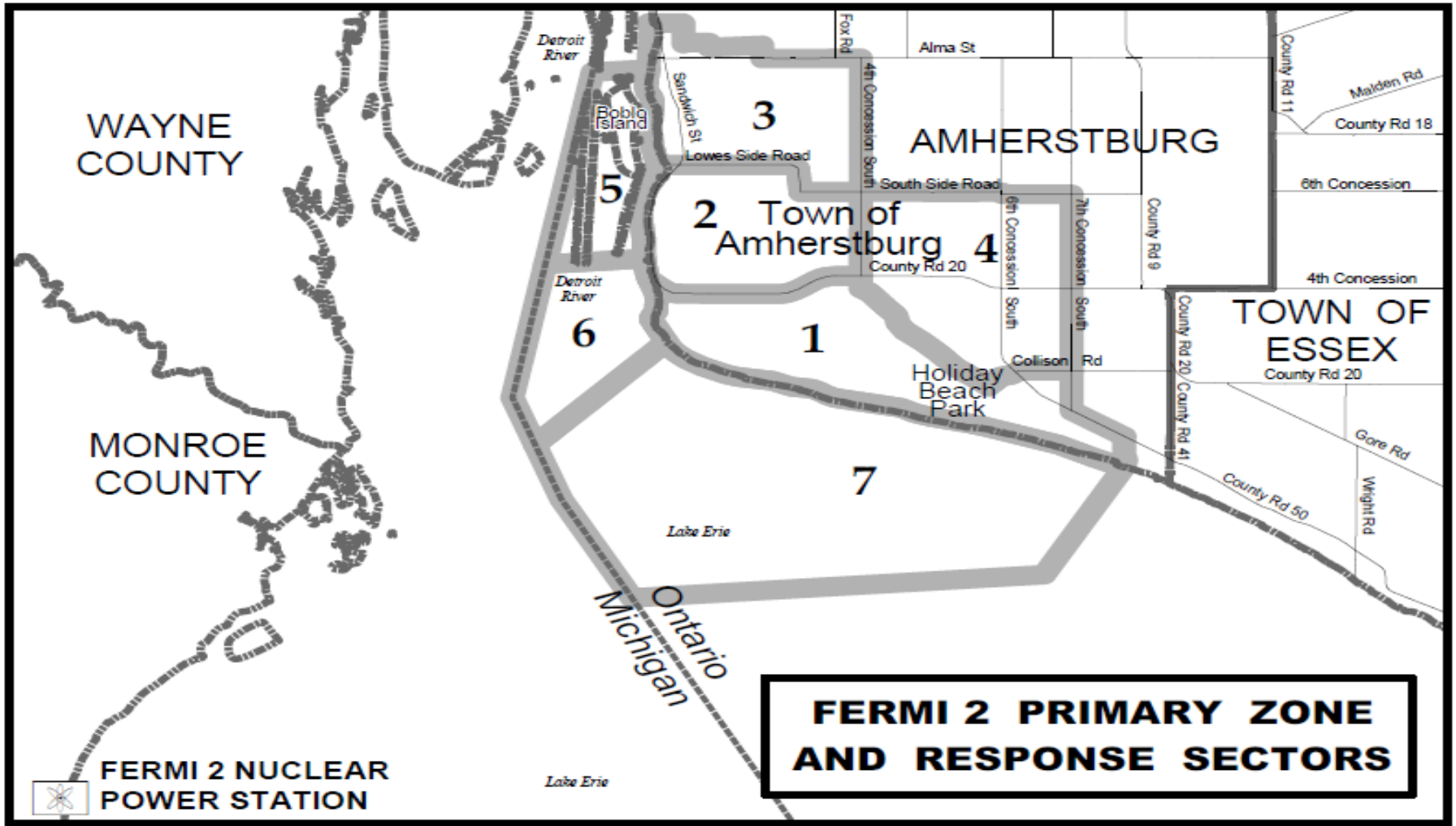


FIGURE 2.3 : PRIMARY ZONE AND RESPONSE SECTORS

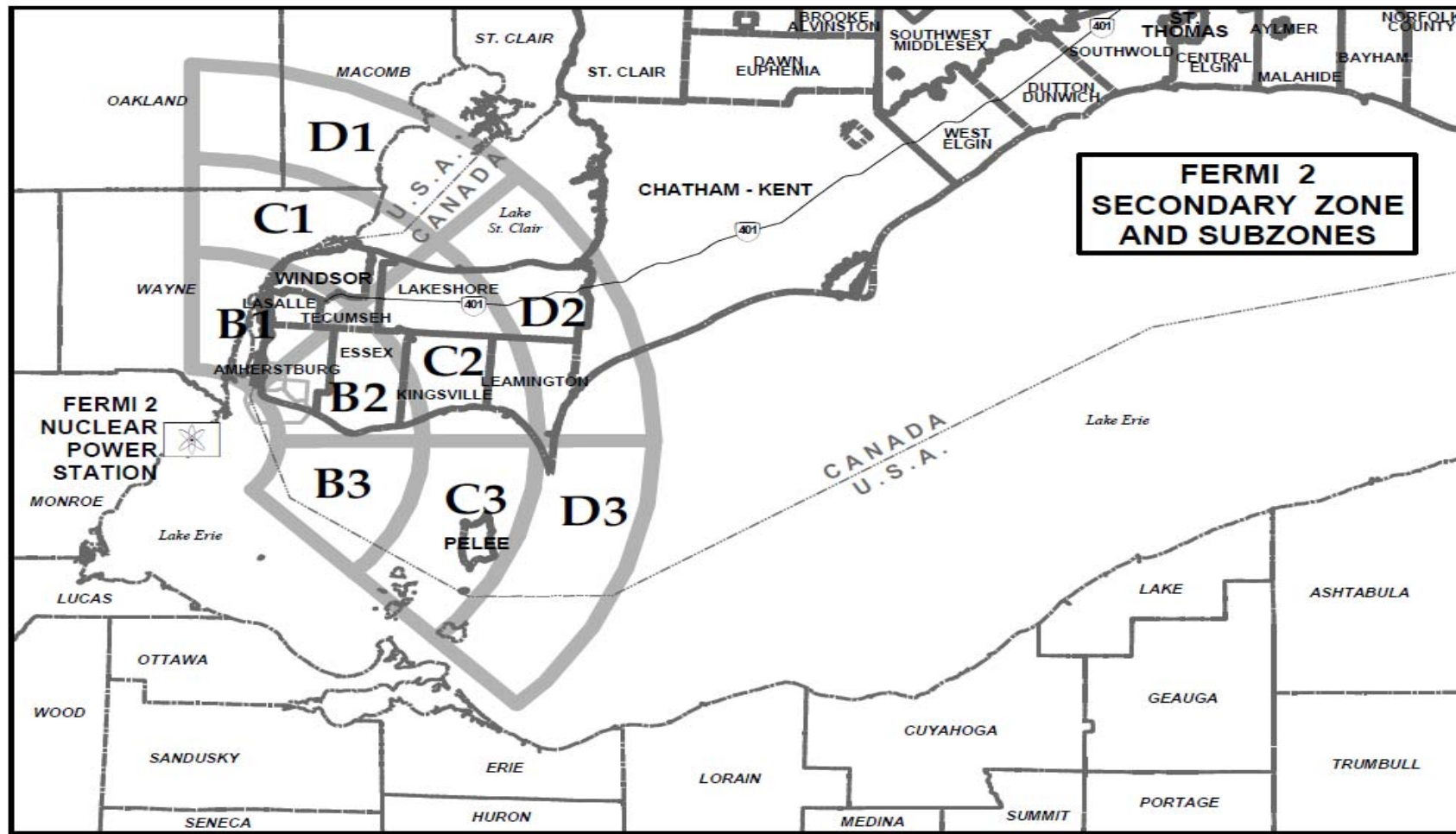


FIGURE 2.4 : SECONDARY ZONE AND SUB-ZONES

2.4.3 Secondary Zone

The Secondary Zone encompasses the County of Essex, within an 80 km radius of Fermi 2. The Secondary Zone is shown in **Figure 2.4** and includes the Primary Zone. **Figure 2.4** also shows the sub-zones of the Secondary Zone.

The Secondary Zone is the area within which it is necessary to plan and prepare for taking Ingestion Control Measures, based on monitoring of the food chain for contamination.

2.5 **Response Sectors**

2.5.1 The Primary Zone for Fermi 2 is divided into 7 response sectors which lie as follows:

- | | | | |
|-----|--|---|-----------------|
| (a) | Town of Amherstburg;
Holiday Beach Park | - | Sector 1 |
| (b) | Town of Amherstburg | - | Sectors 2 - 4 |
| (c) | Boblo Island/Detroit River | - | Sector 5 |
| (d) | Lake Erie and Detroit River | - | Sectors 6 and 7 |

2.5.2 The boundaries of the Response Sectors are shown in **Figure 2.3**, and are detailed in **Annex A**.

2.6 **Planning Data**

2.6.1 Planning Times for Radioactive Emissions

The containment system in the Fermi 2 reactor is designed to prevent any release of radioactivity to the environment following an accident. An emission would only occur if containment was impaired or bypassed. In such cases, radioactive emissions could commence within about 6 hours of the onset of the accident. The duration of the release, depending on the nature of the accident, could be from 4 to 24 hours.

2.6.2 Population Data

Estimates of the Primary Zone population figures are contained in **Annex B**.

2.7 Emergency Organization

- 2.7.1 The provincial emergency response organization is shown in **Figure 2.5**.

Linkages between the provincial emergency response organization and the Michigan State response organization is shown in **Figure 2.6**.

Overall coordination for the Ontario response is provided by the PEOC. Details on the roles and functions of the various elements of this organization are described in the **PNERP Master Plan, Chapter 4**.

2.7.2 Liaison Arrangements

The following liaison and coordination arrangements between different elements of the emergency response organization should be made:

(a) Federal

- (i) The CNSC will establish liaison with the U.S. Nuclear Regulatory Commission (NRC).
- (ii) Federal liaison representative(s) to join the Provincial Emergency Operations Centre (PEOC).

(b) Provincial

- (i) Each Provincial ministry and agency with a role in the emergency response to provide a representative to join the PEOC (see PNERP Master Plan, **Annex I**).
- (ii) Provincial Deployed Staff to be sent to the State of Michigan Emergency Operations Centre. [see **paragraph 2.7.2 (c)** below].
- (iii) Provincial staff to be deployed to the Municipal Emergency Operations Centre (EOC).

(c) Role of Provincial Deployed Staff

- (i) Maintain close liaison with the State of Michigan, U.S. Federal agencies operating in the area and the Fermi 2 authorities and obtain from them the required information and data.
- (ii) Transmit all relevant information to the PEOC and appropriate provincial agencies.

(iii) Provide relevant information from the PEOC on developments in Ontario to the Michigan State Emergency Operations Centre.

(c) Provincial Deployed Staff may be comprised of:

- (i) EMO Field Officers
- (ii) Technical Officers
- (iii) Emergency Information Officers

As appropriate to the situation.

2.7.3 Joint Traffic Control Centre

A Joint Traffic Control Centre (JTCC) shall be set up and staffed for a Fermi 2 emergency, to implement the Joint Traffic Control Plan made under **section 1.4**, upon notification of either a Partial or Full Activation response by the Province.

2.7.4 Municipal Organization

The Town of Amherstburg shall set up a municipal emergency response organization as prescribed in the Municipal Plan.

2.7.5 Provincial Ministry Offices

The following regional/district/area offices of Provincial ministries shall be prepared to respond to the emergency and to provide the necessary assistance to the designated municipalities, as required by the **PNERP Master Plan, Annex I**, and detailed in the Municipal Plan, or as directed by their respective ministries:

- (a) Agriculture, Food and Rural Affairs
Ridgetown Resource Centre
- (b) Community & Social Services
London – Southwestern Regional Office
- (c) Community Safety and Correctional Services
Essex County Detachment, OPP
Chatham Detachment, OPP
Western Region Headquarters, OPP
- (d) Environment
Windsor Area Office
Sarnia District Office
Southwestern Regional Office

- (e) Health and Long-Term Care
Windsor Central Ambulance Communications Centre
- (f) Labour
Windsor Area Office
London Area Office
- (g) Municipal Affairs and Housing
Western Region Municipal Service Office
- (h) Natural Resources
Chatham Area Office (Aylmer District)
Wheatley Provincial Park
- (i) Transportation
Western Region

2.7.6 Host Municipalities

- (a) Pursuant to subsection 3(4) of the *Emergency Management and Civil Protection Act*, R.S.O. 1990, c.E.9, the City of Windsor and Town of Essex have been designated as host municipalities (see **PNERP Master Plan, Annex A**) and as such must address responsibilities for nuclear emergencies in their municipal emergency plans (formulated under subsection 3(1) of the *Emergency Management and Civil Protection Act*).
- (b) The **PNERP Master Plan, Annex I** provides details on designated (host) municipality responsibilities, including the appropriate preparations to receive, shelter and care for evacuees

2.7.7 Support Municipality

In the event of a declared emergency, the Premier or LGIC may order a municipality to provide support or assistance to the affected designated municipalities at the time of the emergency (as authorized by sections 7.0.2(4) or 7.0.3 of the *EMPCA*).

2.8 **Contingency Provisions**

- 2.8.1 The PEOC shall normally coordinate the emergency management and response organization through the centres in the tier below it (see **Figures 2.5** and **2.6**). However, if for any reason any of these centres are not functioning or are not responsive, the PEOC may issue directions directly to any element of the emergency response organization.

- 2.8.2 Likewise, in the absence of contact with the PEOC, these organizations are responsible for taking appropriate actions, according to plans, procedures and the requirements of the situation and, as far as possible, in coordination with other responding organizations.

2.9 Emergency Facilities

The location of the various local emergency centres and facilities to be established, pursuant to this plan are detailed in the Municipal Plan.

2.10 Telecommunications

- 2.10.1 All emergency centres and facilities are linked through landline phone as well as other systems, which also enable facsimile transmission (fax), email and data transfer.
- 2.10.2 All organizations and agencies involved in responding to a Fermi 2 nuclear emergency should ensure the availability of backup telecommunications system e.g. cell phones and satellite phones.

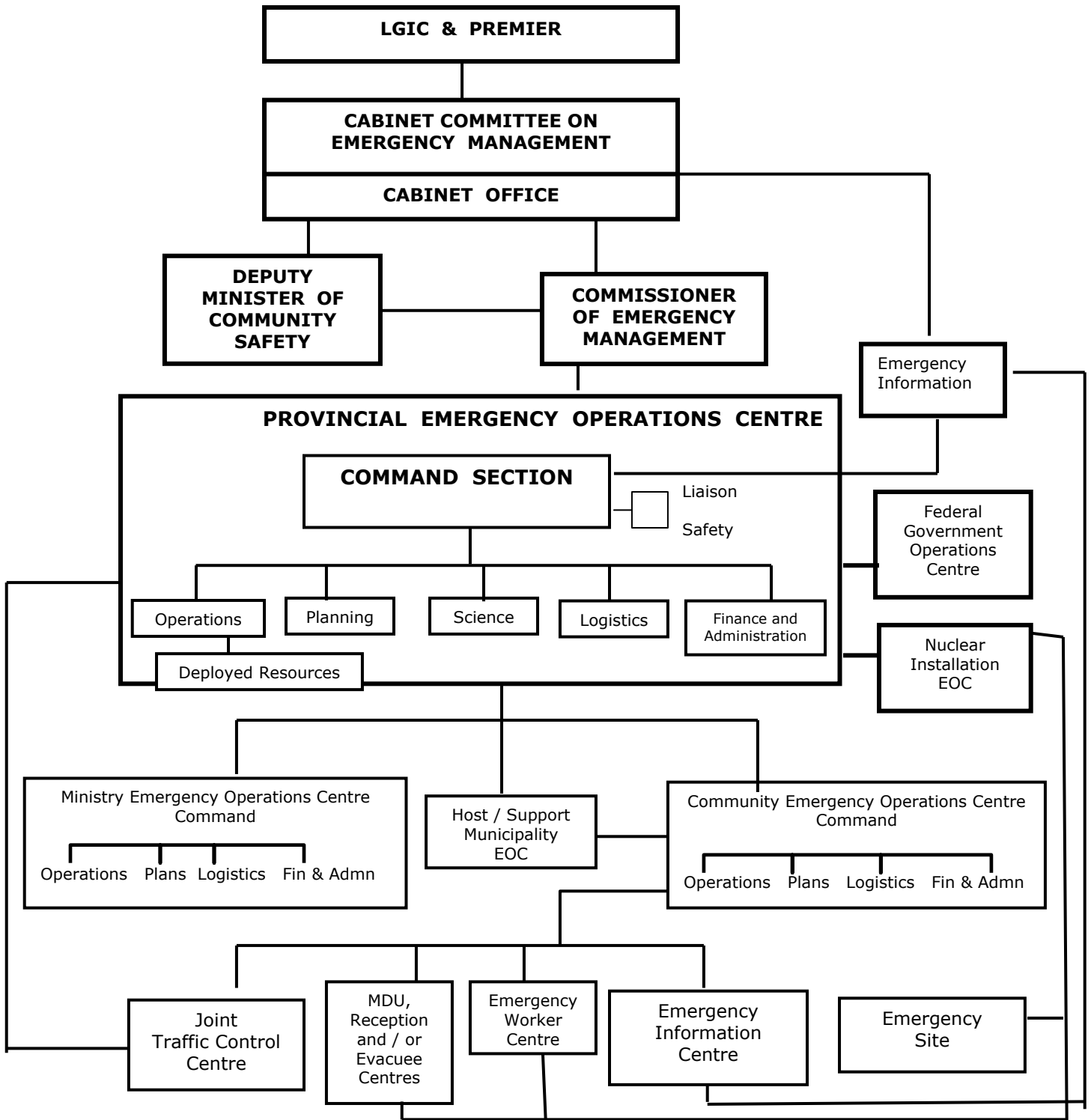


FIGURE 2.5 : PROVINCIAL NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE ORGANIZATION

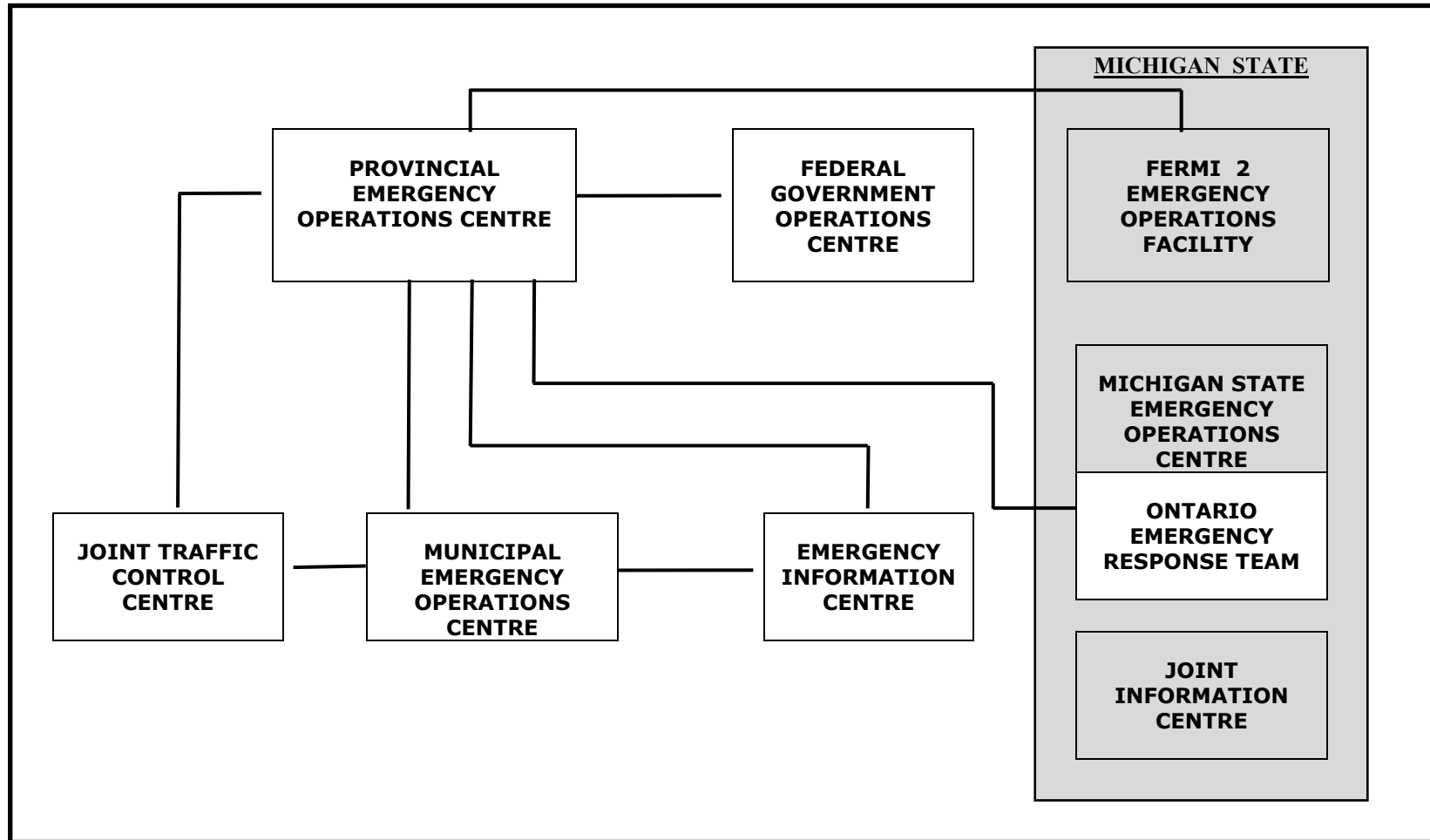


FIGURE 2.6 : FERMI 2 NUCLEAR EMERGENCY RESPONSE ORGANIZATION - RESPONSE PHASE

CHAPTER 3

NOTIFICATION AND RESPONSE

3.1 Initial Notification

- 3.1.1 Under agreement with the provincial government, Fermi 2 NGS will notify the pre-designated contact points (**paragraph 3.1.5** below) in provincial and municipal emergency organizations as soon as conditions arise at the facility, which require such initial notification under the criteria prescribed in **Table 3.1** and, as incorporated in facility procedures.
- 3.1.2 Fermi 2 NGS will complete this initial notification to the PEOC **within 15 minutes** of the requirement for notification being recognized. This initial notification will be followed by a confirmatory telephone notification by Michigan State Police to the provincial contact point.
- 3.1.3 The emergency classification system followed by Fermi 2 nuclear station and the corresponding initial response levels to be adopted in Ontario are shown in outline in **Table 3.1**. This emergency classification system is used by the station for initial notification and subsequently, throughout the course of the accident, for conveying information on onsite status to the offsite authorities.
- 3.1.4 The standard notification message from the Fermi 2 station and Michigan State will contain the following information relevant to Ontario:
- Class of emergency (see **Table 3.1**)
 - Description of the event/condition onsite
 - Prognosis: Stable, Escalating, De-escalating or Terminating
 - Meteorological Data (including the wind direction)
 - Type of Release: Airborne, Waterborne or Surface Spill
 - Radiological Release Data (Actual or Potential)
 - Calculated and measured offsite doses
 - Protective Action Recommendations
- 3.1.5 Contact Points
- (a) The provincial contact point shall be the PEOC.
- (b) The following municipal contact points shall be prescribed by the designated municipality in its plan (**Section 1.3**):
- A notification contact point for the receipt of initial notification on a 24 hour/day, 7 day/week basis.
 - A municipal emergency response staff person who can be contacted on a 24 hour/day, 7 day/week basis for passage of

information and monitoring of the situation following the initiation of a notification.

3.2 Initial Provincial and Municipal Response

- 3.2.1 The initial provincial response to an initial notification from Fermi 2 shall depend on the category (and other relevant information) contained in the notification message (see **Table 3.2**).
- 3.2.2 Within **15 minutes** of the receipt of an initial notification, the PEOC shall decide on the initial response level to be adopted, and inform the municipal contact point. This level will normally be the one linked to the category of the notification received (see **Table 3.2**) unless another level is judged to be more appropriate.
- 3.2.3 The provincial response level adopted can be changed to another level, if considered appropriate, by the PEOC. Such a change can include termination of the provincial response. All concerned shall be notified of any change.
- 3.2.4 **Table 3.2** outlines the initial actions to be undertaken by the Province and designated (Primary Zone) municipality for each response level.
- 3.2.5 The detailed municipal response for each level shall be prescribed in the Municipal Plan.

3.3 Internal Notifications

- 3.3.1 If the PNERP is to be activated (whether fully or partially) the PEOC shall issue an appropriate notification (including an indication of the level of activation) to its staff as well as to the provincial staff of the Emergency Information Centre, and to at least one pre-designated contact point in each Provincial-level organization required to respond to the emergency.
- 3.3.2 Each organization receiving a notification of an Activation Response (either Partial or Full) should issue an appropriate internal notification to its units and individuals who are required to respond. The notification should indicate the level of activation to be adopted.
- 3.3.3 Notification Procedures and Lists

The PEOC and each organization required to issue an internal or external notification (**section 3.4** below) should prepare a procedure and lists of recipients.

3.4 External Notifications

- 3.4.1 Upon adoption of an Activation Response (Partial or Full), external notifications will be carried out as detailed below. The notification must indicate the level of activation being adopted.
- 3.4.2 The PEOC shall notify:
- Town of Amherstburg
 - Host Municipalities
 - Fermi 2
 - Michigan State EOC
 - The Federal government
 - Canadian Coast Guard (confirm Federal notification)
 - Ontario Newsroom and/or Canada News Wire
 - Province of Quebec
 - State of New York
 - State of Ohio
- 3.4.3 The Federal Government will, in turn, notify the US government and the International Atomic Energy Agency (IAEA) under existing agreements and conventions.
- 3.4.4 Other agency/organization notifications shall be notified by the following:
- (a) Ministry of Agriculture, Food and Rural Affairs shall notify:
 - Dairy Farmers of Ontario
 - (b) Ministry of Community & Social Services shall notify:
 - Red Cross, Ontario Division
 - (c) Ministry of Natural Resources shall notify:
 - Ontario Provincial Parks
 - (d) The PEOC shall notify:
 - National Transportation Agency - Emergency Alert
 - CN Rail
 - CP Rail
 - VIA Rail
 - Air Traffic Control

FERMI - 2 EMERGENCY CLASSIFICATION	DEFINITION	INITIAL ONTARIO RESPONSE
UNUSUAL EVENT	Unusual events are in progress or have occurred that indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.	ROUTINE MONITORING
ALERT	Events are in progress or have occurred that involve an actual or potentially substantial degradation of the safety of the plant. Any releases of radioactive material are expected to be limited to a small fraction of the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAG) exposure levels.	ENHANCED MONITORING
SITE AREA EMERGENCY	Events are in progress or have occurred that involve actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed PAG exposure levels, beyond the site boundary.	PARTIAL ACTIVATION
GENERAL EMERGENCY	Events are in progress or have occurred that involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Release of radioactive material can be reasonably expected to exceed PAG exposure levels offsite for more than the immediate site area.	FULL ACTIVATION

TABLE 3.1 : EMERGENCY CLASSIFICATION SYSTEM - FERMI 2 NUCLEAR STATION

INITIAL NOTIFICATION	INITIAL PROVINCIAL RESPONSE	MUNICIPAL RESPONSE
UNUSUAL EVENT	<p style="text-align: center;"><u>ROUTINE MONITORING</u></p> <ol style="list-style-type: none"> 1. Provincial Emergency Operations Centre (PEOC) shall notify the municipal contact point(s), Michigan State, and others as appropriate, and shall monitor the situation. 2. Scientific staff is consulted, if appropriate. 3. If and when appropriate, PEOC Emergency Information (EI) staff issues news release(s). 	Emergency response staff remain in contact with the PEOC, and monitor event.
ALERT	<p style="text-align: center;"><u>ENHANCED MONITORING</u></p> <ol style="list-style-type: none"> 1. PEOC shall adopt Enhanced Monitoring, and shall so inform the municipal contact point(s), Michigan State EOC, and any other organizations affected. 2. If and when appropriate, PEOC EI staff issue news release(s). 3. PEOC to set up a duty team consisting of operations, scientific, EI staff, and others as required. 4. Provincial staff are notified to remain available to report in for duty. 	Emergency response staff monitor event, preferably from Municipal Emergency Operations Centre (Municipal EOC)
SITE AREA EMERGENCY	<p style="text-align: center;"><u>PARTIAL ACTIVATION</u></p> <ol style="list-style-type: none"> 1. PEOC shall adopt Partial Activation response (for details, see paragraph 3.7.3), and shall initiate the appropriate internal and external notifications (see sections 3.3 and 3.4 respectively), including the municipal contact point and host municipalities. 2. PEOC shall be fully staffed. Consideration shall be given to issuing an Emergency Bulletin and/or news release (see Section 4.12). 3. Ministry EOCs and Joint Traffic Control Centre (JTCC) to be established and appropriately staffed. 	<ol style="list-style-type: none"> 1. Issue notification placing municipal emergency response organization on standby. 2. Municipal Emergency Operations Centre fully staffed 3. Emergency Information Centre to be established 4. Other emergency centres readied to become operational without undue delay.
GENERAL EMERGENCY (Emission ongoing or expected)	<p style="text-align: center;"><u>FULL ACTIVATION</u></p> <ol style="list-style-type: none"> 1. PEOC shall notify and ensure that Amherstburg has activated the public alerting system (section 3.5). 2. PEOC shall initiate the appropriate emergency bulletin (section 3.6). 3. PEOC shall issue operational directives implementing the appropriate protective measures based on the State of Michigan's Protective Action Orders (see Table 4.2) 4. PEOC shall adopt Full Activation response (for details, see paragraph 3.7.4), and shall initiate the appropriate internal and external notifications (see sections 3.3 and 3.4 respectively), including host municipalities. 5. PEOC shall assess the situation for further action (section 4.4) 6. PEOC shall issue further emergency bulletins and news releases (see sections 4.12 & 4.13) as appropriate. 7. Ministry EOCs and JTCC to be established. 	<ol style="list-style-type: none"> 1. Initiate public alerting. 2. Issue notification activating municipal emergency response organization. 3. Municipal EOC, EIC and other centres activated and fully staffed. 4. Implement operational directives issued by the PEOC.

TABLE 3.2 : INITIAL PROVINCIAL AND MUNICIPAL RESPONSE

- (e) The Municipal Plan shall provide for the notification of:
- Town of Essex
 - City of Windsor
 - Town of LaSalle
 - Greater Essex District School Board
 - Windsor-Essex County Health Unit
 - Windsor-Essex Catholic District School Board
 - Le Conseil Scolaire Des Ecoles Catholique du Sud-Ouest
 - Essex Region Conservation Authority Local Industries
 - Local Utilities (Hydro, Gas, Water)
 - Local Branches of voluntary organizations
 - Boblo Island
 - Essex Terminal Railway

3.5 Public Alerting

3.5.1 Public Alerting System

Public alerting systems developed under the PNERP shall conform to the following principles:

- (a) The Town of Amherstburg, as the designated (Primary Zone) municipality (see **PNERP Master Plan, Annex A**) shall make provisions, in its nuclear emergency plan, for a public alerting system which shall ensure that the Primary Zone population that may be required to undertake the initial protective measures of sheltering, evacuation, and/or ingestion of KI can be alerted within 15 minutes of initiation.
- (b) The Municipal Plan shall detail how this requirement will be met.
- (c) The Municipal Plan shall describe the special arrangements for alerting in Boblo Island and the Holiday Beach Park.
- (d) The nuclear emergency response plans of the Town of Amherstburg and the Province shall include provisions to coordinate the timing of public alerting, public direction and emergency information. This will ensure that the population will have timely and accurate information on what protective measures to take once they have been alerted of an emergency.
- (e) The Town of Amherstburg shall undertake an initial evaluation of any new system to ensure that the requirements under this policy have been met. Further, they shall integrate regular testing of existing public alerting systems, as a component of their standard exercise program.

3.5.2 The public alerting system for a Fermi 2 emergency shall, in addition to adhering to the principles in **paragraph 3.5.1** above, meet the following requirements:

- (a) Public Alerting shall be carried out primarily by the activation of the system already in place in/near the Primary Zone.
- (b) Additional arrangements for alerting of the areas within the Primary Zone not adequately covered by the existing system shall be prescribed in the municipal nuclear emergency response plan for Amherstburg.
- (c) Such a public alerting system, coupled together with public direction (instructional messages broadcast over radio and television [emergency bulletins]), will ensure that the population within the Primary Zone will be notified in an effective and timely manner.

3.5.3 Implementation

- (a) In case of a GENERAL EMERGENCY notification from Fermi 2 NGS stating that an emission is ongoing or imminent, the municipal contact point should immediately initiate the public alerting system without reference to any other authority.
- (b) In all other cases, the decision as to when the public alerting system is to be initiated will be made by the PEOC, who will then issue the necessary instructions to the designated municipality.

3.6 **Emergency Bulletins**

3.6.1 Whenever the public alerting system is initiated, the PEOC will issue an Emergency Bulletin to the media. The bulletin will contain specific instructions on what actions the public should take and should be continuously repeated for an adequate period of time.

3.6.2 Marine Notification and Public Direction

- (a) The PEOC shall notify the OPP and the Canadian Coast Guard upon a Partial or Full Activation response and the Canadian Coast Guard should, in turn, notify the U.S. Coast Guard.
- (b) In the case of a Full Activation response, the Canadian Coast Guard should broadcast an emergency message through their radio stations to marine craft notifying them of the emergency and directing them to remain clear of the Primary Zone.
- (c) The Municipal Plan shall detail how notification and evacuation assistance will be provided to the marine craft

(with and without radios) on the Ontario side of the Detroit River/Lake Erie. Such detail shall include any arrangements with the local OPP detachment.

3.7 Activation of Emergency Plans – Immediate Actions

- 3.7.1 All jurisdictions and organizations identified in this Plan which receive a notification of plan activation should immediately activate their own plans for dealing with a Fermi 2 emergency. These plans should be fully or partially activated as indicated in the notification received.
- 3.7.2 **Table 3.2** outlines the immediate provincial and municipal response actions to be undertaken for each response level.
- 3.7.3 Partial Activation
- (a) Emergency plans are partially activated when it is anticipated that protective and/or operational measures (other than monitoring and assessment of the situation) are not likely to be immediately required.
 - (b) When the PNERP and other emergency plans are partially activated, the following actions shall be provided for in plans and procedures:
 - (i) Activation and full staffing of the PEOC and the Municipal EOC so as to monitor and assess the situation on a continuous basis.
 - (ii) The Ontario Emergency Response Team to proceed to State of Michigan EOC.
 - (iii) The Provincial Staff/Provincial Emergency Response Team to proceed to the Municipal EOC
 - (iii) Activation of the Ministry EOCs and Joint Traffic Control Centre and staffing as appropriate to the situation.
 - (iv) Activation of the Emergency Information Centre (EIC) with staffing at an appropriate level. Provincial staff to be dispatched as appropriate.
 - (v) All emergency response personnel not immediately required should be placed on standby. This status should ensure that they can be quickly contacted when needed to report to their duty stations.
 - (vi) Other emergency centres should be readied to a level where they can become fully operational without undue

delay, when required. Specific levels shall be prescribed in the municipal plans.

3.7.4 Full Activation

- (a) A Full Activation response will be adopted by the PEOC when it is expected that protective and/or operational measures to deal with the emergency are immediately necessary or, will be necessary in 36 hours, or less.
- (b) Major organization plans under this PNERP should provide for the following actions upon adoption of a Full Activation response:
 - (i) All emergency operations centres, emergency information centres, reception centres, evacuee centres, emergency workers centres and monitoring and decontamination units to be fully staffed and operational.
 - (ii) All emergency response personnel from (i) above to immediately report for duty, as directed.
 - (iii) The field elements under the Scientific Section's monitoring groups to be placed on standby.
 - (iv) The Ontario Emergency Response Team (OERT) shall proceed to State of Michigan Emergency Operations Centre.
 - (v) Provincial staff/the Provincial Emergency Response Team (PERT) shall proceed to the Municipal EOC.

3.7.5 Ministry of Labour Assurance/General Province-Wide Monitoring Group Plan³

- (a) Upon adoption of either Partial or Full Activation, the Assurance/General Province-Wide Monitoring Group Plan should be partially activated.
- (b) The Plan would be fully activated when it appears likely that radioactive contamination will occur in Ontario or some part thereof. Such activation should be done early enough to enable baseline data, at locations additional to those in the MOL Nuclear Reactor Surveillance Program, to be accumulated.
- (c) The decision to fully activate the Assurance/General Province-Wide Monitoring Group Plan will be made by the PEOC.

³ Major Organization Plan under the PNERP.

3.7.6 Radiation Health Response Plan (RHRP)³

- (a) The MOHLTC issues the RHRP as an organizational plan under the PNERP.
- (b) The RHRP describes how Ontario's health care system will respond to a radiological/nuclear event of a malicious or accidental nature. The RHRP sets out a comprehensive province-wide approach to health preparedness and response planning, and provides information to guide local radiological/nuclear planning groups.
- (c) The RHRP will be fully activated through the MOHLTC EOC when it seems likely that the incident may result in high radiation exposures to some persons and/or when Thyroid Blocking is contemplated.

3.7.7 Liquid Emission from Fermi 2

- (a) A release of radioactive liquid from Fermi 2 is very unlikely to affect Ontario's shoreline communities.
- (b) If notification is received from Fermi 2 that a liquid emission of significant quantity has occurred, the PEOC will notify MOE and MOL and discuss whether any drinking water and/or fish sampling should be undertaken.

CHAPTER 4

OPERATIONS - RESPONSE PHASE

4.1 General

4.1.1 Operational response activities depend on the notification category received from Fermi 2:

- (a) Upon receiving notification of an Unusual Event, the Provincial Emergency Operations Centre (PEOC) shall monitor the situation as Routine Monitoring.
- (b) Upon receiving notification of an Alert, the Provincial Emergency Operations Centre (PEOC) shall adopt Enhanced Monitoring.

No activation response is required for the above two notification categories unless an escalation of the emergency occurs or, is anticipated.

4.1.2 An outline of the operational response for a Fermi 2 emergency is given in **Figure 4.1** (Site Area and General Emergency) and an overview of the operational actions required (Partial and Full Activation) is given in **sections 4.3** and **4.4** below.

4.1.3 Principles of other operational response measures are provided in **sections 4.5** through **4.14**.

4.2 Overview of Operations

4.2.1 The PEOC receives notification of an emergency from the Fermi 2 facility.

4.2.2 The PEOC notifies the provincial and municipal contact points as per the PEOC notification procedure and passes on the initial provincial response, based on the notification category received.

4.2.3 If a Site Area Emergency notification is received, the response will be:

- (a) Partial Activation.

4.2.4 If a General Emergency notification is received, the response adopted will be Full Activation.

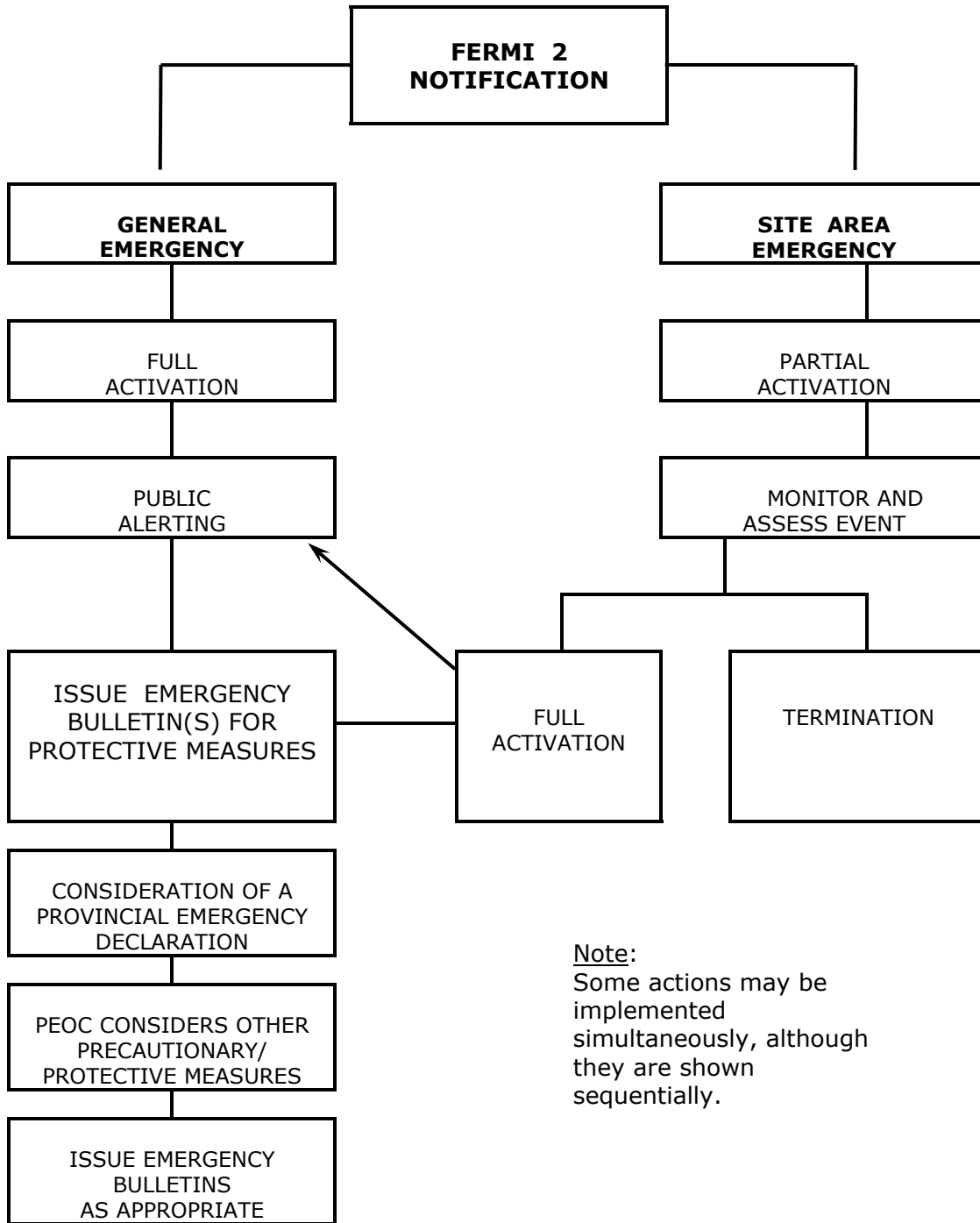


FIGURE 4.1 : INITIAL PROVINCIAL RESPONSE (SITE AREA AND GENERAL EMERGENCY)

- 4.2.5 In the event of a Full Activation response, the PEOC will advise government whether declaration of a provincial emergency is warranted.
- 4.2.6 The initial actions required depend on whether the response initiated is either Partial or Full Activation, as per **sections 4.3** and **4.4** below.

4.3 Partial Activation

4.3.1 General

A Partial Activation will be initiated in response to a Site Area Emergency notification from Fermi 2. The most probable scenario for an accident at the Fermi 2 facility which could result in the activation of this plan would include the holdup within the station containment system of any radioactive material released from damaged fuel. Emission of radioactivity to the environment would occur only if some form of containment failure were to occur following the accident.

- 4.3.2 The general sequence of actions required to be taken by the Provincial Emergency Operations Centre for a Partial Activation is likely to be as follows :

- (a) Notification of the emergency management organization and set up and staffing of emergency operations centres (**section 3.7.3**).
- (b) Making technical assessments of the accident situation and its projected effects as described in **4.3.3** below.
- (c) Decisions on precautionary and protective measures and implementation as described in **4.4.5** below.

4.3.3 Technical Assessments

The Scientific Section of the PEOC shall undertake an assessment for input into the Command Section decision making process based on technical information received from the State of Michigan.

4.3.4 Implementation of Protective Measures

(a) Emergency Bulletins – Protective Measures

Once all relevant stakeholders have been informed, the PEOC shall issue an Emergency Bulletin informing the affected public of the problem at the Fermi 2 station and the need to remain tuned for further information.

(b) Precautionary Measures

The PEOC shall consider the advisability of issuing operational directives (or, in the event of a declared emergency, advising that such orders have been made) for any or all of the following precautionary measures in the Primary Zone (or part thereof) and adjacent areas. Consideration shall also be given to the most suitable timing for the measures (in the case of a delayed emission it may be appropriate to delay the application of some of them), and issue the necessary directions for their implementation. These measures are:

- Closing of beaches, parks, recreation areas, etc.
- Closing of workplaces and schools
- Suspension of admissions of non-critical patients in hospitals
- Entry control (**section 4.5**)
- Clearing the milk storage of dairy farms
- Banning consumption of any item of food or water that may have been exposed outdoors
- Banning consumption and export of locally produced milk, meat, produce, milk- and meat-producing animals
- Removing milk- and meat-producing animals from outside pasture and exposed water sources.

4.4 Full Activation

4.4.1 A Full Activation response will be considered or initiated under the following circumstances:

- (a) When a notification is received from Fermi 2 of a General Emergency or,
- (b) At a later stage of an emergency due to a sudden deterioration.

4.4.2 For a situation such as **paragraph 4.4.1 (a)**, there may be an urgent need to take protective measures for the public likely to be affected. Time may not be available to assemble adequate information and carry out a detailed assessment. Action shall be taken based on the best information readily available and according to the guidelines given below.

4.4.3 Sequence of Action

- (a) If the PEOC receives an initial notification from Fermi 2 stating that an emission is either ongoing or imminent, (and time is not available for an initial scientific assessment) the Duty Operations Chief shall take the following immediate actions:
 - (i) Initiate a Full Activation provincial response

- (ii) Direct public alerting to be initiated and inform the designated municipalities of the operational directives being issued (or, in the event of a declared emergency advise of such orders being made), as per (iii) below.
 - (iii) Issue the relevant Emergency Bulletin to the media directing the protective measures in **Table 4.2**, based on the Michigan State Protective actions.
 - (iv) As soon as the Scientific Section is assembled, it shall undertake a rapid technical assessment to determine what further protective measures are required (**4.4.4** below).
 - (v) Technical assessments shall be repeated on a continuous basis and further protective measures shall be ordered, as appropriate.
- (b) If Full Activation response is initiated as a result of an escalation of an event in progress, the sequence of action will be as per **4.4.3 (a)** with the exception being that, the protective measure(s) ordered will be based on the ongoing technical assessments of the Scientific Section.

4.4.4 Technical Assessments

(a) Condition of Station Systems

Table 4.2 gives three main categories for protective action orders by Michigan State. Based on the information available, the Scientific Section shall make the following assessments:

- Which set of baseline protective measures in **Table 4.2** best matches the current conditions
- Whether current meteorological conditions warrant any change to the distance out to which evacuation is required under **Table 4.2**.

(b) Exposure Levels

- (i) The Scientific Section, in consultation with MOHLTC, shall make an assessment as to whether the dose in any sector(s) is likely to require the activation of the Radiation Health Response Plan (**paragraph 4.4.7** below).
- (ii) The decision to activate the MOHLTC Radiation Monitoring Response Plan will be made by the MOHLTC in coordination with the PEOC.

Subsequent Technical Assessments

As more data and projections become available, the Scientific Section shall continuously update the assessments made in order to establish whether any additional protective measures are required.

4.4.5 Immediate Protective Measures

(a) Decision-making

- (i) The Command Section, PEOC will consider the implementation of appropriate immediate precautionary and protective measures and the appropriate operational directives (or, in the event of a declared emergency, advice of such orders) will be communicated via Emergency Bulletin.
- (ii) Command decisions taken will be based on advice from the Scientific Section (**paragraph 4.4.4** above) as well as on operational and public policy consideration.

Some guidance on the implementation of these measures is given below.

(b) Precautionary Measures

See **paragraph 4.3.4 (b)**

(c) Thyroid Blocking

- (i) The decision to issue an operational directive for Thyroid Blocking will be made by the Chief Medical Officer of Health, in coordination with the PEOC
- (ii) Details regarding Thyroid Blocking are provided in the MOHLTC, Radiation Health Response Plan.

(d) Evacuation, Personal Monitoring & Decontamination

- (i) Where evacuations are being undertaken **during an emission**, the first priority shall be to leave the affected area as quickly as possible. If conditions permit, evacuees will be advised (via an Emergency Bulletin) to go to a facility for monitoring and decontamination. However, if that is not possible, evacuees should be advised to go to a destination of their own choice and once there, evacuees should decontaminate themselves by showering, washing

their hair, bagging their old clothes and putting on a fresh change of clothes.

- (ii) Details for decontamination shall be provided through the Emergency Bulletins as will the location of facilities where evacuees may go for follow-up assurance monitoring for radioactive contamination.

(e) Sheltering

- (i) In the case of an imminent emission, the operational directive to shelter (or, in the event of a declared emergency, advice that such orders have been made) shall be issued via an Emergency Bulletin at least 4 hours before the emission is expected to commence.
- (ii) In the case of an ongoing emission, all sectors adjacent to sectors requiring evacuation should be advised via operational directive to shelter (or, in the event of a declared emergency, advice that such orders have been made).
- (iii) Campers, boaters and other recreationalists should be evacuated from recreational areas in the event of a sheltering directive for that area.

4.4.6 Protective Measures at Time of Emission

- (a) Continuous reassessments up to and including the time that an emission occurs shall be carried out to confirm or revise the areas requiring protective measures.
- (b) During the emission, the situation and projections shall be continually reassessed to see if any additional protective measures are necessary.

4.4.7 Radiation Health Response Plan

If it is estimated that the radiation dose in any sector is likely to be significant, as determined by the Scientific Section in consultation with the MOHLTC EOC, the appropriate provisions of the Radiation Health Response Plan shall be implemented by the MOHLTC.

4.4.8 Subsequent Measures

Technical and operational assessments shall be repeated on a continuous basis and additional protective, precautionary and operational measures shall be considered by the PEOC, and implemented as appropriate via operational directive (or, in the event

of a declared emergency, advice that such orders have been made).
(see **sections 4.5 – 4.13** for guidance).

4.5 Entry Control

- 4.5.1 Management of the main traffic routes shall be coordinated by the PEOC as follows:
- (a) In the case of marine, air and rail, through the relevant coordinating agency in the PEOC (federal liaison, MTO, OPP).
 - (b) In the case of road traffic, by the Joint Traffic Control Centre (JTCC) via the MCSCS representative in the MEOC. If required an OPP representative will be provided to the PEOC.

- 4.5.2 In the event of a partial and full activation response, the PEOC should consider the following entry control measures and notify the proper authority(ies) for implementation, as appropriate:

- (a) Suspension of through traffic on County Road 20 and Essex Terminal Railway.
- (b) Suspension of marine traffic in Lake Erie and the Detroit River.
- (c) Aircraft should be kept clear of the Primary Zone. A wider area may need to be closed to air traffic if there is widespread dispersion of radioactivity.

Once it is established that no significant radiation dose or contamination would be incurred while traversing these areas, these measures can be lifted.

4.5.3 Joint Traffic Control Plan

- (a) This plan shall include provisions for preventing traffic on County Road 20 from entering the Primary Zone whenever Stage 2 of the plan is put into effect (see **PNERP Master Plan, paragraph 6.7.3**).
- (b) Such through traffic shall be diverted around the Primary Zone via a pre-designated diversion route.
- (c) Entry to emergency workers (who have tasks in the zone) shall be permitted on these routes.
- (d) If main traffic routes are likely to remain closed for an extended period, the Joint Traffic Control Centre, under the guidance of the PEOC, shall make alternative routing arrangements. Prior

planning for this eventuality will minimize the disruption created by such closures.

4.5.4 As Part of Protective Measures

(a) Lake / River Sectors

Whenever it is likely that a radioactive emission will take place as the result of an accident/event at Fermi 2, operational directives should be issued to clear Response Sectors 5, 6 and 7 of boats (or, in the event of a declared emergency, advise that such orders have been made), and entry control imposed on them through the Canadian Coast Guard and the local OPP Marine Unit.

(b) Evacuated Sectors

Entry control shall be implemented for sectors that have been evacuated. However, access will be allowed to emergency workers who have tasks to perform in such a sector. This entry control shall be the responsibility of the appropriate police service, under the Joint Traffic Control Plan.

(c) Sheltered Sectors

Entry control shall be advised for sectors undergoing sheltering.

4.6 **Evacuation**

4.6.1 General Principles

- (a) Evacuation is one of the protective measures considered by the PEOC in a nuclear emergency.
- (b) The purpose of an evacuation is to prevent or minimize the exposure of members of the public to the effects of radiation.
- (c) Shadow evacuations (evacuations from beyond the official area being directed to evacuate) may occur spontaneously in areas contiguous to the Primary Zone and thus contribute to the evacuation time for the Primary Zone.

4.6.2 Directing Evacuations

- (a) Evacuations will be directed according to Response Sector or groups of sectors, detailing the boundaries of the evacuation area by readily identifiable roads/landmarks.
- (b) Evacuees who may have been exposed to an emission will be directed either to proceed to a Monitoring and Decontamination Unit (MDU) or, if not possible, to self-decontaminate upon

reaching the destination of their choosing. Information on locations for monitoring shall be provided at the time of the emergency.

- (c) Evacuees who are not at risk of being contaminated will be instructed to leave the Primary Zone and will not be directed to an MDU or to self-decontaminate.
- (d) Evacuees who are not at risk of being contaminated will be permitted to evacuate in the direction and to the destination of their choosing, subject to restrictions (due to weather, traffic conditions etc.) announced by the PEOC through the Emergency Bulletins.
- (e) The smooth and expeditious movement of evacuee traffic is the responsibility of the traffic control organization set up under the Joint Traffic Control Plan.
- (f) The Joint Traffic Control Centre will monitor the evacuating traffic and inform the PEOC and the Municipal EOC of any issues impacting the evacuation.

4.6.3 Evacuation Arrangements

- (a) The Municipal Plan shall include arrangements for mass evacuation transportation and/ or medical transfers.
- (b) Medical assistance required during an evacuation is the responsibility of the emergency medical services and hospitals under municipal arrangements and should be detailed in the Municipal Plan.
- (c) The Municipal Plans of designated (Primary Zone and Host) municipalities shall include details for the reception and care of evacuees.
- (d) The Municipal Plans will provide details regarding the monitoring and decontamination of evacuees.
- (e) Emergency plans of the schools in the Primary Zone should provide for the movement of staff and students to pre-arranged host schools and, if necessary, to Monitoring and Decontamination Units for prior monitoring and decontamination. Evacuated students are the responsibility of their school staff until collected from the host school by their guardians/parents.
- (f) Emergency plans of institutions (hospitals, nursing homes, and other) in the Primary Zone should include provisions for the transfer of staff/residents/patients to an appropriate facility

outside the Primary Zone, with which prior arrangements have been made. Provisions should also be made to take staff/residents/patients to Monitoring and Decontamination Units, if necessary.

As it may not be possible or desirable to evacuate some of these persons, special arrangements shall be made for the care of staff/residents/patients remaining behind, as identified in the Municipal Plans.

(g) Boblo Island

The Municipal Plan shall describe the arrangements for evacuation of residents from the island to Amherstburg and by road transport to the Reception/Evacuee Centre(s).

4.6.4 Reception and Evacuee Centres and Monitoring and Decontamination

- (a) The Municipal Plan will detail arrangements for these facilities.
- (b) The MOHLTC will develop arrangements, in coordination with the designated municipalities' public health units to track evacuees for the purpose of contamination assessments and to provide follow up for those affected.

4.7 **Thyroid Blocking**

- 4.7.1 It is the responsibility of the MOHLTC to procure adequate quantities of KI pills for the Primary Zone population (**PNERP Master Plan, Appendix 7 to Annex I and paragraph 5.11.1**).
- 4.7.2 The Municipal Plan will detail the arrangements for stocking and distribution of stable iodine tablets, under the authority of the Medical Officer of Health, for Primary Zone institutions and for emergency centres (Emergency Worker, Reception and Evacuee Centres and MDUs).
- 4.7.3 Other operational responsibilities regarding Thyroid Blocking (stocking, distribution and administration) are prescribed in the Radiation Health Response Plan, as prepared by MOHLTC.
- 4.7.4 The decision to implement the administration of KI will be taken by the Chief Medical Officer of Health.

Michigan State Protective Action Order		Ontario Protective Measure
1	Evacuate any of Michigan Areas 1,2,3 + Shelter rest of the Emergency Planning Zone (EPZ)	<ul style="list-style-type: none"> • Shelter Sector 1
2	Evacuate Michigan Areas 4 and/or 5 and there is no imminent/ongoing emission	<ul style="list-style-type: none"> • Evacuate Response Sector 1 • Shelter rest of Primary Zone
3	Evacuate Michigan Areas 4 and/or 5 and there is an imminent/ongoing emission	<ul style="list-style-type: none"> • Evacuate Response Sector 1 • Shelter rest of the Primary Zone • KI ingestion for Response Sector 1

TABLE 4.2 : GUIDELINES FOR IMPLEMENTING IMMEDIATE PROTECTIVE MEASURES

4.8 Traffic Control

- 4.8.1 A Joint Traffic Control Plan shall be developed for the area likely to be affected by a Fermi 2 emergency. During an emergency, the Joint Traffic Control Centre (**paragraph 2.7.3**) shall be responsible for implementing the Joint Traffic Control Plan (**section 1.4**).
- 4.8.2 The traffic control plan shall be designed to allow implementation in three incremental stages:
- (a) Stage 1. Automatically initiated as soon as the traffic control plan is activated. The aim in this stage shall be to keep traffic flowing smoothly on the main evacuation routes and, to ensure that these routes remain open.
 - (b) Stage 2. Initiated when it appears likely that the emergency may require evacuations or, when spontaneous evacuations begin to occur. Traffic shall be prevented from entering the Primary Zone on the main evacuation routes and shall instead be diverted around it (local traffic can still enter the Primary Zone on other routes). However, access should be allowed to emergency workers who have tasks to perform in the Primary Zone. Stage 1 measures will continue.
 - (c) Stage 3. Initiated when it appears that particular sectors are likely to be evacuated. Additional resources shall be deployed to ensure that evacuation proceeds smoothly beyond the Primary Zone boundary. Stages 1 and 2 measures will continue.
- 4.8.3 The timing and order of sector evacuations will be determined by the PEOC, in coordination with the Municipal EOC and the JTCC.
- 4.8.4 The traffic control plan shall provide, where applicable, for the priority evacuation of any Response Sector(s) (**paragraph 4.5.3**), if and when ordered.
- 4.8.5 Operational directives implementing evacuations (or emergency orders issued in the event of a declared emergency) will be accompanied by emergency bulletins issued by the PEOC.

4.9 Radiation Monitoring

- 4.9.1 Radiation Monitoring surveys shall be carried out, under the auspices of the Scientific Section of the PEOC, in order to determine the following information:
- (a) Exposure rates and contamination levels

- (b) Identification of radionuclides
- (c) Appropriate sampling locations

4.9.2 Monitoring and data analysis details shall be provided in the operating procedures of the Scientific Section and the groups operating under it (Nuclear Incident, Environmental Radiation Monitoring, Assurance Monitoring Group, and General Province-Wide Monitoring Groups).

4.9.3 Field Monitoring Resources

Upon request from the PEOC's Scientific Section, **Environmental Radiation Monitoring Group**, Health Canada will arrange aerial monitoring to determine the path of the radioactive plume and the location of ground contamination. This will support ground monitoring positioning and deployment.

4.9.4 Provincial Agencies

(a) Assurance Monitoring Group

Headed by the Radiation Protection Service of the Ministry of Labour, this group implements monitoring programs in areas adjacent to a radioactive release which do not require protective measures against radiation. These programs are aimed at assuring the public that air, food and water are safe (refer to MOL Assurance/Province-Wide Monitoring Group Plan).

(b) General Province-Wide Monitoring Group

Headed by the Radiation Protection Services of the Ministry of Labour, this group monitors province-wide sampling to determine the extent of radionuclide dispositions and foodstuff contamination (refer to MOL Assurance/Province-Wide Monitoring Group Plan).

4.10 Ingestion Control Measures

4.10.1 Before an emission commences, appropriate ingestion control measures will be directed as a precaution within and, if necessary adjacent to the Primary Zone (**paragraph 4.3.4 (b)**).

4.10.2 If general province-wide monitoring indicates the need, appropriate ingestion control measures will be considered in areas known or suspected to be contaminated.

- 4.10.3 Based on the data produced by field monitoring, additional ingestion control measures will be considered where necessary, while the original precautionary measures may be lifted where appropriate.

4.11 Emergency Worker Safety

- 4.11.1 At the commencement of an emergency resulting in the activation of this plan, the Response Sectors in the Primary Zone shall be assumed to carry the following safety status (**PNERP Master Plan, Annex H**), depending on the category of the notification initiated by Fermi 2 :

(a) SITE AREA EMERGENCY Notification

- All sectors - GREEN

(b) GENERAL EMERGENCY Notification

- Sectors 1, 6, 7 - ORANGE
- Sectors 2,3,4,5 - GREEN

(c) All Other Cases - If there is no ongoing emission, the sector safety status shall be:

- All sectors - GREEN

And shall remain GREEN until an emission is Ongoing.

- 4.11.2 As soon as relevant data is available the PEOC will reassign safety status to all the sectors and will update them periodically.
- 4.11.3 During the course of an emission over the land areas of the Primary Zone this updating will be done on an hourly basis. The safety status of sectors should be promptly communicated by the PEOC to all concerned.
- 4.11.4 It is the responsibility of each organization with emergency workers operating or required to operate in the Primary Zone to ensure that they are kept apprised of the latest/current safety status of Response Sectors.
- 4.11.5 The Municipal Plan shall provide for the setting up of Emergency Worker Centres (EWC), as appropriate (**PNERP Master Plan, section 5.13 and paragraph 6.7.8** refers).
- 4.11.6 The Town of Amherstburg is responsible for the monitoring and decontamination aspect of EWCs, the relevant details of which will be provided in their plans/procedures.

- 4.11.7 Emergency workers who need to enter a sector assigned a safety status other than GREEN should first report to an Emergency Worker Centre, where they will be provided personal monitoring devices and briefed on the precautions they should observe and any maximum time limit on their stay in the sector (see paragraph **4.11.6** below).
- 4.11.8 If an emission is ongoing, any emergency service (police, fire and Emergency Medical Services (EMS)) who are required to operate in the Primary Zone (before an Emergency Worker Centre is functioning) should carry and use the following equipment:
- (i) Dosimetry
 - (ii) Stable iodine (KI)
 - (iii) A card listing the default safety status of sectors (**paragraph 4.11.1** above) and the precautions to be taken for each safety status (**PNERP Master Plan, Annex H**).

Municipal Plans will detail how these emergency services will obtain these items, appropriately store them, and maintain such equipment so that it is readily available when needed.

4.12 Public Direction

- 4.12.1 Directions to the public on the measures they should take to ensure their safety and welfare during the emergency should be issued only by the PEOC. All other jurisdictions/organizations which have a need to issue any such directives/ advisories should forward them to the PEOC, and **not** issue them directly to the public.
- 4.12.2 Emergency Bulletins
- (a) For public purposes, the PEOC will issue its operational directives in the form of Emergency Bulletins.
 - (b) To the extent possible, Emergency Bulletins should be prepared in advance of an emergency.
 - (c) Emergency Bulletins will be issued to the broadcast media. Copies will also be sent to the principal elements of the emergency response organization that may be affected by them.
 - (d) It will be the responsibility of the PEOC Emergency Information Section to monitor the broadcast of the Emergency Bulletins and confirm that they have been correctly transmitted.

4.13 Emergency Information

- 4.13.1 Lower Level Response

When the offsite response adopted is Routine Monitoring or Enhanced Monitoring (**Table 3.2**) all news releases on the event, prepared on behalf of the Province, will be issued by the Director, Communications Branch, MCSCS who acts as the Provincial Chief Emergency Information Officer (PCEIO).

4.13.2 Higher Level Response

- (a) When the offsite response adopted is Partial or Full Activation, (**Table 3.2**), the Director of Communications Branch, MCSCS, assumes his/her role as PCEIO, establishing the Provincial Emergency Information Section (EIS), on behalf of the Province.
- (b) The designated municipalities and the federal government will each have their own emergency information operation.
- (c) In order to ensure the coordination and consistency of all emergency information issued to the public, these other jurisdictions or organizations should inform the Provincial EIS if they plan to issue news releases or other emergency information materials. Conversely, the PEIS will liaise with these organizations regarding the materials being issued by them.

4.13.3 The Provincial Emergency Information Section (EIS)

- (a) The Provincial EIS is responsible for ensuring that the Province's emergency information is coordinated with the emergency information produced and disseminated by the designated municipalities, nuclear operator, federal partners and other stakeholders to ensure consistent messaging.
- (b) In that regard, wherever possible and practical, information will be shared amongst all partners prior to release.
- (c) The EIS functions include:
 - (i) Coordinating all of the provincial communications related to the nuclear emergency;
 - (ii) Issuing provincial emergency information;
 - (iii) Sharing and coordinating emergency information with the Municipal EIC to ensure continuity and uniformity of messaging;
 - (iv) Sharing copies of all news releases, fact sheets, and other public information materials with EICs prior to release to the public, if or when possible;

- (v) Sending a liaison officer(s) to the Municipal EIC, if so requested and practicable.

4.13.4 Municipal Emergency Information Centre (EIC)

- (a) The designated (Primary Zone) municipality will establish an EIC at a Partial or Full Activation response.
- (b) The EIC is responsible for the collection, dissemination and monitoring of local emergency information.
- (c) The designated (Primary Zone) municipality may invite neighbouring municipalities, federal and/or provincial liaison officers to participate in the EIC operation.
- (d) The functions of the EIC include:
 - (i) Issuing news releases and other public information documents to the local media and residents describing the emergency and response measures;
 - (ii) Keeping the Provincial EIS informed regarding the development and distribution of news releases and other public information documents to local residents and media;
 - (iii) Keeping the PEIS apprised of local public perceptions, rumours, and reactions;
 - (iv) Assisting media covering the emergency;
 - (v) Monitoring local media to ensure that local news is being correctly transmitted to the public by the media and confirming this with the EIS; and
 - (vi) Arranging media briefings as required to communicate "key messages" to the public.

4.13.5 Public Inquiry

- (a) Provincial public inquiry lines, using the Ontario Shared Services (OSS) call centre, will be coordinated by the Provincial Emergency Information Section (PEIS) in conjunction with the PEOC.
- (b) The designated municipalities will be responsible for establishing their own public inquiry operation.

4.14 Transition to Recovery Phase

4.14.1 Criteria

The PEOC can end the Response Phase of the emergency at any time after *both* the following conditions are met:

- (a) The nuclear reactor that had the accident is in a guaranteed shutdown state.
- (b) No further controlled or uncontrolled emissions at significant levels are anticipated. Generally, emissions will be considered below a significant level if:
 - (i) They do not warrant the taking of any exposure control protective measures, *and*
 - (ii) They do not adversely affect public safety.

The recovery phase is prescribed separately.

ANNEXES

ANNEX A : RESPONSE SECTOR BOUNDARIES

ANNEX B : PLANNING DATA

ANNEX C : NUCLEAR/RADIOLOGICAL GLOSSARY

RESPONSE SECTOR BOUNDARIES

SECTOR	MUNICIPALITY	SECTOR BOUNDARY (north; east; south; west)
1	Town of Amherstburg Holiday Beach Park	County Road 20; east side of Big Creek; Collision Road; 7 th Concession South; County Road # 50; the easterly limits of Holiday Beach Conservation Area; Lake Erie.
2	Town of Amherstburg	Lowes Side Road; Creek Road; South Side Road; 4 th Concession South; County Road 20; Detroit River.
3	Town of Amherstburg	The limits of Honeywell Chemicals; part of Thomas Road; Alma St.; 4 th Concession; South Side Road; Lowes Side Road; Detroit River.
4	Town of Amherstburg	South Side Road; 7 th Concession South, Collision Road; east side of Big Creek; 4 th Concession South.
5	Town of Amherstburg	Boblo Island
6	Detroit River	Detroit River south of Boblo Island; Essex County shoreline; a line drawn at 230° from Bailey Beach to the international boundary; the international boundary.
7	Lake Erie	South boundary of sector 6; Essex County shoreline; a line drawn at 215° from the east end of sector 9 to the international boundary; the international boundary.

PLANNING DATA

SECTOR	POPULATION*	SCHOOLS (ENROLMENT)	CHILD CARE FACILITY & NURSERY SCHOOLS	RETIREMENT HOMES	LONG TERM CARE FACILITY
1	1500**	-	-	-	-
2	425		-	-	-
3	12,000	5 (3659)	3 (108)	13 (50)	2 (156)
4	530	2 (652)	-	-	-
5	500***	-	-	-	-
TOTALS	14,955	7 (4311)	3 (108)	13 (50)	2 (156)

* 2010 Population Figures

** In addition, Holiday Beach receives a maximum of 2,500 visitors per day during summer months.

*** Projected Bob-lo Island population over 5 years period.

NUCLEAR / RADIOLOGICAL GLOSSARY

Absorbed Dose: The amount of energy absorbed in the body, or in an organ or tissue of the body, due to exposure to ionizing radiation, divided by the respective mass of the body, organ or tissue. Expressed in terms of gray (rad).

Acute Radiation Syndrome: An acute illness caused by irradiation of the entire body (or most of the body) by a high dose of penetrating radiation in a very short period of time.

Alerting: Informing the population, by means of an appropriate signal, that a nuclear emergency has occurred or is about to occur.

Collective (Equivalent) Dose: An expression for the total radiation dose incurred by a population, defined as the product of the average radiation dose to a group of exposed persons and the number of persons in the group. Generally expressed in terms of person-sievert (or person-rem).

Committed (Equivalent) Dose: The radiation dose that will be received over a period of 50 years (for adults) or 70 years (for children) after a person takes in a quantity of radioactive material (by ingestion, absorption or inhalation). The dose is expressed in terms of sievert (or rem).

Containment (System): A series of physical barriers that exist between radioactive material contained in a nuclear installation and the environment. Containment usually refers only to the reactor and vacuum buildings, and integral systems such as dousing.

Contamination: The unwanted presence of radioactive material in water or air, or on the surfaces of structures, areas, objects or people.

Contiguous Zone: The zone immediately surrounding a nuclear installation. An increased level of emergency planning and preparedness is undertaken within this area because of its proximity to the potential hazard. The actual Contiguous Zone for each designated nuclear installation is specified in the relevant Implementing plans of the Provincial Nuclear Emergency Response Plan.

Critical Group: A particular group among the relevant population which, by virtue of age, sex or dietary habits, is expected to receive the highest dose from a stated radiation source or exposure pathway.

Crop Control: See **Produce and Crop Control**.

Decontamination: Reduction or removal of radioactive contamination in or on materials, persons or the environment.

Derived Emission Limits: Limits for radioactive emissions to air and water from a nuclear facility which ensure that, under normal operating conditions, Canadian Nuclear Safety Commission dose limits for members of the public are not exceeded by persons exposed to those emissions.

Designated Municipality: A municipality in the vicinity of a nuclear facility which has been designated under the *Emergency Management and Civil Protection Act*, as one that shall have a nuclear emergency plan (*for list see PNERP Master Plan, Annex A*).

Designated Nuclear Installation: A nuclear installation designated under the *Emergency Management and Civil Protection Act*, as one to which the specific and detailed provisions of the Provincial Nuclear Emergency Response Plan apply (*for list see PNERP Master Plan, Annex A*).

Dose: A measure of the radiation received or “absorbed” by a target. The quantities termed absorbed dose, organ dose, equivalent dose, effective dose, committed equivalent dose or committed effective dose are used, depending on the context. The modifying terms are often omitted when they are not necessary for defining the quantity of interest.

Dose Projection: The calculation of projected dose (see **Projected Dose**).

Dose Rate: The amount of radiation dose which an individual would receive in a unit of time. In the context of this Plan, the measurement units are multiples or submultiples of the sievert (or rem) per hour.

Dosimeter: An instrument for measuring and registering total accumulated exposure to ionizing radiation.

Effective (Equivalent) Dose: The sum of the weighted equivalent doses received by the organs and tissues of the body, where the weighted equivalent dose is the equivalent dose to an organ or tissue of the body multiplied by the appropriate weighting factor laid down in the Nuclear Safety and Control Act and Regulations promulgated by the Canadian Nuclear Safety Commission. Expressed in terms of sievert (or rem). See Weighted Dose.

Emergency Bulletin: Directions to the public on appropriate protective and other measures to be taken during a nuclear or radiological emergency, which are issued by the province and broadcast through the media.

Emergency Workers: A person who assists in connection with an emergency that has been declared by the Lieutenant Governor in Council or the Premier, under 5.7.0.1 of the EMCPA or by the head of council of a municipality under section 4 of the EMCPA. This may include persons who are required to remain in, or to enter, offsite areas affected or likely to be affected by radiation from an accident, and for whom special safety arrangements are required. Examples of emergency workers

include police, firefighters, ambulance and personnel from the Canadian Armed Forces, and other essential services. They shall not include nuclear energy workers (pursuant to the Nuclear Safety and Control Act) or assurance (ingestion) monitoring field staff.

Emergency Worker Centre: A facility set up to monitor and control radiation exposure to emergency workers.

Emission: In the context of this plan, emission refers to the release of radioactive material to the environment from a nuclear facility in the form of either an airborne or a liquid emission.

Entry Control: The prevention of non-essential persons from entering a potentially dangerous area.

Equivalent Dose: The absorbed dose multiplied by a weighting factor for the type of radiation giving the dose. Weighting factors for use in Canada are prescribed by the Canadian Nuclear Safety Commission. This term is also sometimes called *weighted dose*. Expressed in terms of Sievert (or rem).

Evacuation: The process of leaving a potentially dangerous area.

Exposure: The act or condition of being subject to irradiation. Exposure can be either **external exposure** (irradiation by sources outside the body) or **internal exposure** (irradiation by sources inside the body).

Exposure Control: See **Plume Exposure Control**.

Exposure Pathways: The routes by which radioactive material can reach or irradiate humans.

External Notification: The notification of organizations and agencies (not directly part of the emergency management organization) which may be affected by a nuclear emergency, or which may be required to assist in responding to it.

Far Incident : A transborder nuclear accident or event anywhere in the world which could affect Ontario, other than a Near Incident (see **Near Incident**).

Field Monitoring: The assessment of the magnitude, type and extent of radiation in the environment during an emergency by such means as field surveys and field sampling.

Food Control: Measures taken to prevent the consumption of contaminated foodstuffs and control of including the supply of uncontaminated foodstuffs. Where appropriate, such control may include food storage to permit radionuclide decay, diversion of food to non-human, non-food chain use or disposal of unusable stocks.

Government Operations Centre: The federal government organization located in the National Capital Region which directs the mobilization and delivery of national support to the affected province in the case of an event in or near Canada, or which coordinates federal actions in the case of an international event.

Guaranteed Shutdown State: A reactor is considered to be in this state when there is sufficient negative reactivity to ensure sub-criticality in the event of any process failure, and approved administrative safeguards are in place to prevent net removal of negative reactivity.

Hostile Action : Any deliberate action, or threat of action, which could cause a nuclear emergency.

Host Municipality: The municipality assigned responsibility in the Provincial Nuclear Emergency Response Plan for the reception and care of people evacuated from their homes in a nuclear emergency.

Imminent Emission: A radioactive emission that will occur in 12 hours or less.

Ingestion Control: Emergency response operations in which the main aim is to avoid or reduce the risk from ingestion of contaminated food and water.

Initial Notification: The notification made by a nuclear facility to Provincial and/or municipal authorities upon the occurrence of an event or condition which has implications for public safety, or could be of concern to these authorities. The criteria and channels for making such notification are usually prescribed in emergency plans.

Internal Notification: The notification by an organization to its personnel who are required to respond to an emergency.

Land Control: Control on the use of contaminated land for growing food products or animal feed.

Livestock Control: Quarantine of livestock in the affected area to prevent movement to other areas. Slaughter of such animals for food may be banned.

Milk Control: Preventing the consumption of locally produced milk in the area affected by a nuclear emergency, and its export outside the area until it has been monitored. Collection of contaminated milk, its diversion to other uses, or its destruction, may also be involved.

Near Incident : A transborder nuclear accident or event at a site within the states and provinces adjacent to Ontario.

Notification: Conveying to a person or an organization, by means of a message, warning of the occurrence or imminence of a nuclear emergency, usually includes some indication of the measures being taken or to be taken to respond to it.

Nuclear Emergency: An emergency caused by an actual or potential hazard to public health and property or the environment as a result of ionizing radiation from a nuclear installation.

Nuclear Establishment: A facility that uses, produces, processes, stores or disposes of a nuclear substance, but does not include a nuclear installation. It includes, where applicable, any land, building, structures or equipment located at or forming part of the facility, and, depending on the context, the management and staff of the facility.

Nuclear Facility: A generic term covering both nuclear establishments and nuclear installations.

Nuclear Installation: A facility or a vehicle (operating in any media) containing a nuclear fission or fusion reactor (including critical and sub-critical assemblies). It includes, where applicable, any land, buildings, structures or equipment located at or forming part of the facility, and, depending on the context, the management and staff of the facility.

Nuclear Substance: As defined in the (Federal) Nuclear Safety and Control Act.

Offsite: Offsite refers to the area outside the boundary (fence) of a nuclear facility.

Onsite: Onsite refers to the area inside the boundary (fence) of a nuclear facility.

Operational Directives: Direction given by the emergency response organization to implement operational measures.

Operational Measures: Measures undertaken by the emergency response organization to deal with the emergency, including measures to enable or facilitate protective action for the public, e.g., public alerting, public direction, activation of plans, traffic control, emergency information, etc.

Operator: holder of a subsisting licence issued pursuant to the Nuclear Safety and Control Act for the operation of a nuclear installation.

Pasture Control: Removing milk- and meat-producing animals from pasture and from access to open water sources, and supplying them with uncontaminated feed and water.

Personal Monitoring: The use of radiation monitoring devices to assess whether persons, and their belongings, including vehicles, are contaminated or not, and, if contaminated, the type and level of contamination.

Plume: A cloud of airborne radioactive material that is transported in the direction of the prevailing wind from a nuclear facility. A plume results from a continuing release of radioactive gases or particles. (This term may also be used for

waterborne radioactive material resulting from a liquid emission. Where the context does not make it clear, this will be referred to as a **Waterborne Plume**). (See also **Puff**).

Plume Exposure Control: Emergency operations aimed at reducing or avoiding exposure to a plume or puff of radioactive material. Measures to deal with surface contamination and re-suspension might also be included.

Precautionary Measures: Measures which will facilitate the application and effectiveness of protective measures. (For a list of some of these, see **PNERP Master Plan, paragraph 2.2.7**).

Primary Zone: The zone around a nuclear installation within which planning and preparedness is carried out for measures against exposure to a radioactive plume. (The Primary Zone includes the Contiguous Zone). The actual Primary Zone for each designated nuclear installation is specified in the relevant Implementing Plans of the Provincial Nuclear Emergency Response Plan.

Produce and Crop Control: Restrictions on the harvesting or processing of potentially or actually contaminated crops, vegetables and fruits. Measures include: embargoing export outside the affected area; storage to allow radionuclide decay; diversion to non-food chain use; destruction and disposal of contaminated produce.

Projected Dose: The highest committed effective equivalent dose, or committed equivalent dose to a specified organ or tissue, likely to be received through all applicable exposure pathways by the most exposed member of the critical group in the area for which the projection is being made.

Protective Action Levels (PALs): Projected dose levels which provide technical guidance on the need to take certain protective measures. For values, see **PNERP Master Plan, Annex E**.

Protective Measures: Measures designed to protect against exposure to radiation during a nuclear emergency. (see **PNERP Master Plan, Table 2.1**).

Puff: A plume of short duration. The distinction between a puff and a plume is a matter of time. The upper limit on the duration of a puff is half an hour. (See also **Plume**).

Radiation: In the context of this Plan, radiation means ionizing radiation (i.e. radiation with the potential to harm human tissue or cells produced by a nuclear substance or a nuclear facility).

Radionuclide (or radioactive isotope or radioisotope): A naturally occurring or artificially created isotope of a chemical element having an unstable nucleus that decays, emitting alpha, beta and/or gamma rays until stability is reached.

Radiological Emergency: Emergency caused by an actual or environmental hazard from ionizing radiation emitted by a source other than a nuclear installation

Radiological Device (RDs): could be lost or stolen radioactive sources which may be in locations resulting in radiation exposure and/or contamination of the public, contamination of a site and/or contamination of food and water supplies.

Radiological Dispersal Device (RDDs): A device that causes the dissemination of radioactive material.

Response Sectors: The Primary Zone is subdivided into Response Sectors to facilitate the planning and implementation of protective measures.

Restoration: Operations to restore conditions to normal after a nuclear/radiological emergency.

Secondary Zone: The zone around a nuclear installation within which it is necessary to plan and prepare measures against exposure from the ingestion of radioactive material. (The Secondary Zone includes both the Primary and Contiguous Zones). The actual Secondary Zone for each designated nuclear installation is specified in the relevant site-specific part of the Provincial Nuclear Emergency Plan.

Selective Evacuation: The evacuation of a specified group of people, such as seriously ill patients in hospitals, bedridden residents of nursing homes, or disabled residents.

Sheltering: A protective measure which uses the shielding properties of buildings and their potential for ventilation control to reduce the radiation dose to people inside. (For details, see **PNERP Master Plan, section 2.2**).

Source Term: A generic term applied to the radioactive material released from a nuclear facility. It includes the quantity and type of material released as well as the timing and rate of its release. It could apply to an emission that was currently occurring, or one which had ended, or one which could take place in the future.

Special Group: A group for which special constraints arise in the application of a protective measure, such as intensive care patients in hospitals and institutions, bedridden patients in nursing homes, handicapped persons and prison inmates.

Support Municipality: Pursuant to section 7.0.2 (4) of the EMPCA, the LGIC may, by order, specify a municipality to act in a support capacity to provide assistance to designated municipality(ies).

Thyroid Blocking: The reduction or prevention of the absorption of radioiodine by the thyroid gland, which is accomplished by the intake of a stable iodine compound (such as potassium iodide) by people exposed or likely to be exposed to radioiodine.

Transborder Nuclear Emergency: A nuclear emergency involving a nuclear facility or nuclear accident or event outside the borders of Ontario that might affect people and property in the province.

Venting: The release to the atmosphere of radioactive material from the containment of a nuclear facility through systems designed for this purpose.

Vulnerable Group: A group which, because it is more vulnerable to radiation, may require protective measures not considered necessary for the general population, such as pregnant women and, in some cases, children.

Water Control: Measures taken to avoid the contamination of drinking water supplies and sources, and to prevent or reduce the consumption of contaminated water.

Weighted Dose. Expressed in terms of sievert (or rem). See Effective (Equivalent) Dose.